

SUPPLEMENT.

The Mining Journal,
RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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[WITH STAMPED... SIXPENCE.
UNSTAMPED, FIVEPENCE.]

MINERS' ASSOCIATION OF CORNWALL AND DEVON.

The fourth general meeting of this association was held at the Public Rooms, Redruth. In the absence of the President (Mr. John F. Basset, of Trehidly) Mr. Charles Fox was called to the chair, and the following were present:—Mr. J. Enys, Rev. S. Rogers, Messrs. Trevithick, R. Pearce, W. M. Grylls, J. Hocking, jun., W. Pike, &c.

Mr. R. Pearce, at the request of the Chairman, read letters from the following gentlemen, explaining the reasons which prevented them from attending the meeting:—Mr. R. Hunt, who was detained by official duties in the North of England; Mr. J. St. Aubyn, who had an engagement for that day in the eastern part of Cornwall; Mr. J. Williams, who had also an engagement for Friday, but who enclosed a cheque for 31. 3s., the subscription due from himself and the United Mines; and Captain Charles Thomas, who was unable to attend from a similar cause.

The CHAIRMAN then said—I regret that on the present occasion I should be called upon to occupy the chair instead of our President, J. F. Basset, who is in Italy, amidst the wonders of art and greater wonders of nature—a region in which are exhibited such volcanic phenomena as do not come under our observation in this country, but which yet aid in the study of mineralogy and geology, and the formation of rocks elsewhere. Sir Chas. Lyell has well said that in the last century volcanists and neptunians dogmatised as to the origin of rocks, ignorant of many facts since disclosed both in the laboratory of Nature and in that of the chemist, as, for instance, Sir J. Hall proved that carbons of lime under as much less pressure than the weight due to the elevation of Vesuvius melts without giving out its carbonic acid, thus confirming Dr. Hutton's suggestion that the effects of heat would be modified under pressure. This subject is not alien from the miner's pursuits, inasmuch as the metals are generally found in or near the crystalline rocks above the level of the plains. The volumes of superheated steam of carbonated hydrogen, &c., given out by volcanoes evince the pressure of forces which can decompose lava and limestone, and deposit under various circumstances metals and other minerals, and have supposed that about Vesuvius would be found nearly one-third of the simple minerals known in the whole world. A great many of these have been, probably, found since the Christian era. Robert Mallet, whose observations on earthquakes are so well known, is very desirous that experiments should be made on the temperature of volcanoes, as being likely to throw much light on cosmical physics. More fortunate than Pliny, who was not only a great general, but a great naturalist, he looked down into the minor crater of Vesuvius, and concluded from long experience in inspecting furnaces, that the heat of the incandescent sides was sufficient to melt copper. Yet there was a period, about 230 years ago, when cattle were grazing on the bottom of the larger crater, and its sides were covered with shrubs. Vesuvius had then been idle for nearly five centuries. Though all the characteristics of our mineral-bearing formations should be studied, great ranges of rocks or mountains, like the Andes, are not essential as subjects of observation; as Dr. Wollaston's laboratory was on the smallest scale, yet evoking a fortune out of a watch glass, by his discovery how to mould metallic platinum, and as Sörby from the contents of cavities in minute crystals judged both the temperature and pressure under which ranges of rock had been formed. We know that the analysis of minerals, and of the rocks in which they are ordinarily found, form the subject of the lectures on chemical geology, given in the Jermyn-street Institution. I had the pleasure of being present recently at one of a very instructive character, delivered there by Dr. Percy. He described the effects of iron ore in the bottom of the Lake of Lamond, in Sweden. When the lake is frozen over, men walk along the ice, and at certain places making holes in it, by means of long rods shod with iron, they feel at the bottom of the lake for the iron. They ascertain by the touch with more certainty than the miners attained with their "dowsing rods," where the deposits of iron exist; which having ascertained, they cut holes in the ice, in which they insert twigs, each man setting out his bounds. When the ice became stronger, they cut holes from 3 to 4 ft. wide, and putting down iron rods, they succeed in drawing up the iron ore. This appears a very strange mode of obtaining iron, but it is the only mode of obtaining it in that district, and is a very interesting mode of obtaining it, containing 45 to 50 per cent. of iron; and Dr. Percy went on to say that the ore is obtained at the bottom in about 30 years—possibly the work of Infusoria. He then alluded to the enormous deposits of iron ore in the hills of the Cleveland Hills (where one mine yields 4000 tons daily); fossils, especially some of the great saurians, are intermixed. I merely mention this as an illustration of some of the various forms under which we may find deposits of iron ore, as well as of other minerals. Whilst we regret the absence of our President, and the absence of some of our members, we are glad to see that the association, having made it the very highest point of duty to allow him to quit the country, used his influence to prompt those mines in which he is interested to aid us by their subscriptions. You will hear from the report that, financially, we are in a much better position than last year; and I am sure that you will also hear, not perhaps with entire satisfaction, though with pleasure, than one of our very able lecturers, Charles Twite, has accepted the important appointment under the Government of Paraguay of mineral surveyor of a large district in that country. I had hoped that he would have laid before us some report which he has been preparing on machinery for boring holes in the earth; but he defers doing so, as this is not a meeting for receiving papers. Having lately looked at Major Rickard's short narrative of his mineral survey of the Argentine Republic, in which what he told us he has said so well that one regrets that he has not given us more details. I am persuaded of the advantages they are likely to result from this appointment of Mr. Twite; because it is obvious that Major Rickard's scientific knowledge has already proved to be of great value to the district which he was employed to survey, and that the progress made in the discovery of the large lodes of galena were worked for silver and lead, down to a certain depth. Under the galena the lodes contained clay containing the oxides and carbonate of iron, and all this was thrown away by the miners as useless. This was in a region where mining had been pursued for a long period. Major Rickard analysed this rejected, this ferruginous clay, and found it rich in chloride of silver, some containing 900 ounces to the ton, the average in places containing 200 ounces. The silver is easily separated. Since Major Rickard made his analysis, the miners have been able to obtain the silver, and the veins may continue productive to great depths. As to the reduction of the cost of the silver, they previously depended—by the old process by which this is effected it takes three months to extract the silver, whereas Major Rickard thinks that by the modern process it might be done in 24 hours, so great have been the improvements which have of late years been introduced by scientific men in this and similar processes, and which have conferred such great benefits upon mining. Looking at the results which society obtains from the inspection and survey of such men as Major Rickard, I shall look for similar results from the labours of Charles Twite, in Paraguay, where he will not meet with a despot, who valued the naturalist Rampton too much to allow him to quit the country. To refer again to boring-machines, E. S. Crease informs me that his boring-machine is now in operation in Tavistock, and that he can bore in hard granite at the rate of 1½ in. per minute. It is about to be worked in a mine near the Tamar. I have also been in correspondence with George Low, of Newark, who has invented a very promising machine for a like purpose. Two practical men, Matthew Loan and Capt. Ennor, have, since I was there, inspected the boring-machine in the Mont Ceniz Tunnel. I requested Matthew Loan to publish his notes on the Mont Ceniz rocks to French fish-plate, and yet be more tractable than the stones of the tunnel, as you may see by the specimen of the rock on the table. I am persuaded that Capt. Ennor, who is a very observant man, has come to his conclusions on inaccurate data, as regards the progress of the tunnel machine-boring as compared with what might be done by hand labour, as it is quite clear from the Government report that the progress has been three times as great as he supposed it to be. The report in the end of the tunnel (as I experienced it), and the foreign measurement may explain how Capt. Ennor's error has arisen. I think that we should be thankful that so few accidents have arisen from the man-engines since their introduction to the present time; whereas one was shocked to read that within eight weeks six men were crushed to death by the skip falling on them in one colliery, and of three being killed, and others seriously injured in another. But there is another class of accidents which, notwithstanding that has been done, are still sadly prevalent, I now allude to those from blasting. Mine agents are much better judges than I can be how these deplorable casualties are to be avoided; many of them, no doubt, arise from the carelessness of the men. Whether many might not be averted by more stringently enforcing proper precautions I do not know, but it is a matter deserving of very serious consideration. Then there is the question of ventilation of mines, which is always more or less before us, which is not yet satisfactorily solved, nor is it, I believe, to be solved by the adoption of any one definite plan. When we can use boring-machines driven by compressed air—which I believe must be done if done successfully—we then should be able in many of the ends of the mine to secure fresh air for the men, as

I found it in the Mont Ceniz Tunnel. I am inclined to think that the introduction of a tunnel wheel, perhaps one of Shields's might be used with great advantage than any other, because an extremely small column of water will work it; and experience has shown that such a machine is more efficient than the ordinary method, especially than a rotating fan. Iron ropes, I hope, will be more and more used in mines instead of chains. We all know that any link of a chain, which is often subject to blows, gets its fibrous structure altered, and miners tell us that on the accidental breaking of a chain, and its falling away, injures a large portion of its length. The question of engine reports has engaged the attention of the Polytechnic Society from time to time, who have endeavoured to have the duty returned in a more complete manner than has been done for some years; but we seem still to want the requisite stimulus to engineers, &c., by the omission in publishing the performances of many engines, including the whirling-engines. I have alluded to the improved state of our funds; and I am glad to see that John Vivian, of Swansea, now subscribes twelve guineas—his brother smelter, John Michael Williams, from the first aided our funds with a like amount. I am extremely pleased at the subscriptions of these two gentlemen, the largest copper smelters in the world, because eminently successful as this process of smelting now is, I say, successful, because there is the minimum quantity of copper left in the slag, because it shows that the knowledge of metallurgical operations and of mining successfully should be extended, and that there is much margin for progress in all of them. I believe it is a fact that in the Swansea copper smelting works enough sulphurous gas is thrown off by the furnaces as to produce 4500 tons of sulphuric acid weekly. A gentleman at Newcastle thinks that he has constructed a furnace by which this gas could be saved, and sulphuric acid made at small cost. It is only of late years that our iron pyrites have been turned to account; and in Newcastle 75,000 tons of this mineral are now used annually in the production of 34,000 tons of sulphur, two-fifths of the raw material used in the manufacture of soda. What is the value of that alkali? Not less than two millions sterling. And even now, notwithstanding all the enquiries and experiments of scientific chemists, nine-tenths of the sulphur is lost with the alkaline waste. If we had any doubts as to the advantages which have been derived from the introduction of science associated with practice and experience, let us enter the calico-printing works of Hoyle, Manchester, where are the nicest chemical processes, colouring and fixing the most beautiful patterns, engraved by men who have been educated in the school of design. In one room you will find 60,000 lb. of copper rollers, stored up for use, in addition to those in use. To what is the manufacture indebted for its present prosperity? To the modest philosopher John Dalton, the author of the atomic theory, who suggested some processes which enabled the manufacturers to attain their world-wide reputation. They are only half employed, in consequence of the cotton famine; but it is an old saying, slightly altered, "Slavery, having had rope enough, is now hanging itself." Free trade in our colonies in the East is enriching them, and I have no doubt it will extend to the West, and then we shall no longer see the snow-white down of the cotton plant, which clothes half the world, stained by the blood of the slave. When that time comes, we shall find the market for our manufactures in America such as we have not known before, for all experience tells us that the world's trade is that which carries on with a slaveholding state, of which the labouring population is stunted to the smallest modicum of clothing or furniture. I am glad to see the advance that has lately taken place in the prices of the two staple minerals of Cornwall—copper and tin. The process of tin dressing is one demanding the closest attention, and the valuable processes which have been introduced at Dolcoath, Carn Brea, Tincroft, &c., show what may be accomplished in this respect. Capt. Daw, of Carn Brea, has given a very exact tabular statement of the cost of returning tin in that mine, showing that, after it has reached the surface, including wear and tear, and allowing 10 per cent. for the engine, the cost was 137. 9s. 3d. per ton of black tin. I observe by his return that the expense of steam-stamp is 10l. per stamp-head more per annum than if driven by water, rent free. The expense attendant upon the stamping and dressing of tin is a matter of great importance, because this metal stands on a different footing from copper. Copper of very low produce, as is well known, will not defray the expense of shipping and transport to Wales in order to be smelted; nor so, which when ready for sale is in small bulk, and not far from the furnaces. (Hee hee hee.)

Mr. RICHARD PEARCE then read the following report:—

REPORT OF THE COUNCIL.

The council feel that they have but little to report, beyond the satisfactory progress of the principle which led to the formation of the Miners' Association. That there is an earnest desire for an increase of that knowledge which bears directly on mining and metallurgy has been most conclusively proved by the experience of the last three years. The demands for our teachers have been beyond our means, and several important districts which have applied for their assistance in the formation of classes are still without this aid. The report of Mr. Richard Pearce will instruct you as to the amount of work done, and show you how wide a field has been embraced by our very limited means during the past year. The value of the association is unmistakably proved by the fact that several of the students in its classes have been selected to fill offices of trust and situations requiring superior knowledge both at home and abroad. Beyond this, your council can indicate with satisfaction improvements which have been made in our mines, and which have originated in the discussions held at our annual and quarterly meetings. Our President has liberally given a donation of 50l. to the association; and he expresses his hope that the example set by Mr. Enys and himself may be followed by other gentlemen connected with mining, or owning mineral property, to the extent of relieving the association from debt. Your financial officer will show by his report that we have reduced our debt, but that still much economy and additional subscriptions are required to relieve the association from a pressure which retards its progress. We are about to lose the services of Mr. Charles Twite, who has for three years been our teacher of mechanical engineering, surveying, &c., and who has acted as financial secretary. That gentleman has been appointed mineral surveyor to the Government of Paraguay. We are proud of this appointment, and we are glad to see that Mr. Twite has accepted it with pleasure. Our best wishes accompany Mr. Twite, and we hope we may be favoured with communications from him from time to time relative to the new and interesting field upon which he is about to labour.

ROBERT HUNT, Honorary General Secretary.

FINANCIAL OFFICER'S REPORT.

I have great pleasure in laying this report of the financial position of the association before the council. For the first time I am able to report that the income has more than met the expenditure, and that we have been enabled to reduce our debt by the sum of 50l. This increase in our funds has in a great measure arisen by two liberal donations of 50l. each, respectively from Mr. John S. Enys, in Feb. last, and from Mr. J. F. Basset, our President; and in part from additional subscriptions to the amount of 40l. from the mines, which I have every reason to hope will be greatly increased during the next year, especially as our President is making exertions in that direction; and we have also had many new subscribers to our general fund—making a subscription of 392l., as against 320l. last year. We hope that the debt which has from the commencement been harassing us will be so far lessened, if not, indeed, quite extinguished, as to enable the association to become what it always has been intended to be—a Miners' Association, with branches in every mineral district of Cornwall and Devonshire.

C. TWITE.

LECTURER'S REPORT.

During the past year courses of lectures have been given in eight districts, embracing the principal mining localities of the two counties, and about 150 working miners have attended these lectures, not including a much larger number who attended the popular lectures which have from time to time been given in the various districts. The subjects which have been taught are mechanics, mechanical drawing, surveying, mineralogy, mining geology, and metallurgy. In nearly all the districts the miners who have attended the class lectures have shown by their diligence and attention to the various subjects taught that the instruction has been much appreciated. Reports have been received from the secretaries of some of the classes, speaking in high terms of the benefits which have been derived, and soliciting further information on subjects relative to mining and metallurgy. Several popular lectures have been given in the various districts on subjects interesting to miners, and they have in nearly every case been numerously attended, which proves beyond a doubt that a strong desire is prevalent for instruction, which will be of benefit to the miner both at home and abroad. Some of the young miners who have gained proficiency in the several branches taught, have received situations of trust in this county, and in some of the mining districts abroad—thereby showing that mining speculators are not slow to appreciate the talents of men who have laboured to acquire scientific information bearing directly on their own profession. R. PEARCE, Educational Secretary.

Mr. PEARCE also read the following minutes of the council meeting held the same day:—Messrs. W. Pike and John Hocking, jun., be requested to audit the accounts. Mr. Twite having communicated his acceptance of

the office of mineral surveyor and engineer to the Paraguay Government, and his resignation of his lectureship, the council beg to record their sense of the value of his services in successfully carrying out the objects of this association; and they doubted not that his experience and knowledge would make him fulfil the duties of his new and very important appointment. It is directed that he be furnished with a copy of this minute.—Mr. W. PIKE moved that the reports which had just been read be adopted, and the minutes, of course, approved.—Mr. J. HOCKING, jun., seconded the motion.

The Rev. S. ROGERS said that he did not know whether he ought to do himself the pleasure of referring to the very able address which the Chairman had just given, in which he had referred to many matters that were of considerable interest to the association. There was another thing which he might mention as illustrating the discoveries which scientific ability was now accomplishing. A short time ago he had the pleasure of meeting Mr. Hunt, of Pothleven, and he showed him some specimens of small crystals which had been discovered by his machine, in sand, in Van Diemen's Land. His scientific ability enabled him to ascertain that these crystals were rubies and sapphires, and Mr. Hunt intended to go out in a short time to Van Diemen's Land to examine these deposits. Some lead minerals of an interesting character had recently been found in Wheel Rose, consisting of the arseniates, phosphates, and carbonate of lead. There was a black coating on the minerals, and it was considered that the carbon in the smoke of the powder used in blasting had converted the arseniate of lead into carbonate of lead. This led him to the subject of blasting-powder. He agreed with the Chairman that most of the accidents in their mines occurred in connection with blasting. His experience as a clergyman of a large mining parish satisfied him that the majority of the accidents proceeded from careless tampering with the sledge-hammer before the powder had been sufficiently compressed. They were all aware that a newly-invented substitute for blasting-powder had been tried at the meeting of the Polytechnic, which he believed was far less subject to explosion. His brother had found that 20 per cent. less of this material than of the ordinary powder would do the same work in a quarry. Of course, practical men knew best whether it was likely to answer, but it seemed to him that its use would be attended with far less danger. With reference to the Swedish lake deposits of iron, he should like to ask the Chairman whether he thought they were due to iron in solution in the water; or whether the silicate of iron with which the cases of many of the organisms known as Infusoria were coated—but which he thought to be vegetable—would account for them?

The CHAIRMAN believed, looking at the fact that the deposits required a number of years to form, and that their principal locality was amongst the reefs, &c., at the margin of the water, that they had the latter origin. There was nothing improbable in this when they considered what immense reefs and islands were raised by the coral insects; and that Foraminifera formed the great mass of limestone rock stretching from the Pyrenees into the interior of Asia.

Mr. PEARCE said that Mr. Rogers had made a slight mistake when referring to the lead minerals, which it was, perhaps, desirable to correct. He had stated that the black substance, or coating, was produced by the action of carbon in the powder smoke. Carbonate of lead was not unfrequently found associated with the black sulphide of lead, and this was owing to the great affinity that lead sulphide has for sulphuretted hydrogen, which was always present in blasting-powder smoke.

Mr. ROGERS said that he meant to have said sulphide of lead.

In reply to another question from the Rev. gentleman, the CHAIRMAN said that no successor to Mr. Twite had yet been appointed. The council preferred to see their way a little more clearly before they came to any formal resolution upon the subject. The association, although making no show, was doing a great deal of work; and it enabled those among whom it laboured to accomplish more fully the purpose of their being, and to reach the goal of which Lord Bacon wrote—namely, that all men should be furnished with all the means which Providence had chosen to put in their reach.

Mr. TREVITHICK, in moving a vote of thanks to the Chairman, whose abilities and services he highly eulogised, referred in terms of strong gratulation to the operations of the society. He thought that Mr. Twite's appointment to his new and very important office might be in part presumed to be due to the knowledge he had picked up; and he carried out his duty as their lecturer; and said the other lecturer, Mr. Pearce, had become very highly valued for his views on the subjects he taught in this mining school. He thought that there could be no doubt as to the great advantages which the association was calculated to confer upon mining and practical miners, were it properly supported.

Mr. W. M. GATLEY, in seconding the motion, said that he had had the pleasure on that and other occasions when Mr. Fox took the chair at the meetings of the association, of listening to the very able and eloquent addresses which he had delivered; and he felt satisfied that so long as they had a gentleman of such ability willing to lend them his assistance, the association would possess one great element of success. He believed that the small attendance was owing to the fact of the meeting having been looked on not as one for the reading of papers, but only for the transaction of the usual formal business, and the making of arrangements for the proper working of the association, which it was thought could be as well managed by three or four persons as by a larger number.

The motion was put by Mr. TREVITHICK, and carried unanimously.

The CHAIRMAN, in acknowledging the compliment, said that as there now 150 working miners profiting by this association, let them hope that when their short lease on lives was determined it might, through their efforts, leave something more than ruined engines, unfenced shafts, and hills of waste—viz., a generation of energetic, instructed, experienced, truthful miners, persevering without obtrusiveness, and cautious without cowardice, who would strive to reach what Lord Bacon called the "true goal of all science,"—to furnish man with all powers; and he might add, to employ these in the service of the Highest.—This concluded the business, and the meeting broke up.

GEOLOGICAL SOCIETY OF LONDON.

FEB. 3.—Prof. A. C. RAMSAY (President) in the chair. Mr. Charles William Villiers-Bradford, B.A., of St. Catherine's College, Cambridge, and Greatham Rectory, Petersfield, was elected a Fellow.

The following communication was read:—

1.—"On the Permian Rocks of the North-West of England, and their Extension into Scotland," by Sir R. I. Murchison, K.C.B., F.R.S., F.G.S., and Prof. R. Harkness, F.R.S. In this paper the authors propounded a new view of the composition of the Permian Group in the North-west of England; and, by the consequent re-arrangement of the rocks involved in this change in classification, they were enabled to place the Permian strata of Great Britain in direct correlation with those of the continent of Europe. This new feature in British geology is the assignment of a large amount of red sandstone in the north-western counties to the Permian period, and its removal from the new red sandstone, or trias-formation, to which they have hitherto been assigned in all geological maps. The authors showed that these red sandstones are closely and conformably united with the magnesian limestone or its equivalent, and form the natural upper limit of the permian deposits. They thus affirmed that a tripartite arrangement of the Permian rocks holds good in Westmoreland, Cumberland, and Lancashire, and that the three sub-divisions are correlative with those formerly shown by Sir R. I. Murchison to exist in the Permian deposits of Germany and Russia, thus proving the inapplicability of the term *trias* to this group of rocks.

The difference in lithological details of the Permian rocks of the north-west of England from those on the opposite flank of the Pennine chain was next adverted to; and it was observed that, with so vast a dissimilarity in their lithological development in England, we need not be surprised at finding still greater diversities in these permian deposits when followed into Germany and Russia.

The discovery, by Professor Harkness, in the central member of this siliceous group in Westmoreland, of numerous fossil plants identical with the species of the kuper schiefer in Germany, and in the marl-slate of the magnesian limestone of Durham, was given as a strong proof of the correctness of the authors' conclusions.

The comparative scarcity of igneous rocks, and the evidence of powerful chemical action in the Permian strata of Britain, is contrasted with their abundance in deposits of that age in Germany; but proofs are, nevertheless, brought forward to show that the hemisphere of Cumberland and Lancashire was formed in the early accumulation of the Permian deposits.

In describing in detail the different members of the Permian group of the north-west of England, the authors define the downward and upward limit of the strata which have undergone dioromitization; for whilst certain bands of calcareous breccia (the "brook-rum" of the natives), which occur in the central portion of the series, contain much magnesia, the lower breccias, composed of the same mountain-limestone fragments, have no trace of it; nor is it to be detected in the upper member, or St. Bees Sandstone. A large collection of rock and fossils from Victoria, Australia, presented to the society by Mr. A. B. Selwyn, was exhibited.

The next evening meeting of the society will be held on Feb. 24, when the following papers will be read:—1. "On further discoveries of Flint Implements and Fossil Mammalia near Bedford," by J. Wyatt, F.G.S.—2. "On the Discovery of the Scales of Pteraspis, with some Remarks on the Cephalic Shield of that Fish," by E. Key Lankester, communicated by Prof. T. H. Huxley, F.R.S., F.G.S.—3. "On some remains of Bellerophon from the Upper Devonian Sandstones of Eglis," by G. E. Roberts: communicated by Prof. J. Morris, F.G.S.

Once a year they assemble in holiday attire, and, accompanied by the authorities, proceed to the cathedral church, headed by a band playing a miners' march, where a miners' service is provided them. There are monthly feasts on the mines, as in Cornwall, but each mine is provided with a Hut Haus, where refreshments are supplied to the miners and visitors at a cheap rate. Placed in the wall of the town-house at Freiberg is a stone of silver ore bearing date 1050. It is to commemorate the re-opening of this mine 800 years ago! In former times its yield of native silver was enormous, and it is recorded that on one occasion such a mass

was found that, before bringing it to the surface, a banquet took place in the mine, to which the Elector was invited. The feast was unique, tables and chairs being of solid silver! It was from the immense wealth derived from the silver mines of Freiberg that the Saxon Princes were enabled to amass and collect the fabulous riches contained in the renowned Green Vault at Dresden. The Saxon Government has prosecuted during a great number of years an immense work—the piercing a tunnel through the mountains to the Elbe, at Meissen, a distance of 24 miles. It is supposed that the result of this stupendous undertaking, undoubtedly the greatest work of the kind in Europe, will be to drain off the water from the whole of the mines in the Freiberg district.

FOREIGN MINES.

ALAMILLOS.—Jan. 30: In the 3d level, west of San Lino shaft, the granite is a little more settled than formerly, but there is no improvement in the lode. The lode in the 3d level, east of San Juan shaft, is small and disarranged. In the 3d level, west of the 7th shaft, there are occasional stones of lead in the driving. In the 3d level, west of Zamora's winze, there are small veins of quartz crossing the decomposed granite. The lode in the 3d level, east of Aguilar's winze, is small, containing a little lead in the back of the end.—Shafts and Winzes: At San Lino shaft, below the 3d level, the ground is very hard, and the men are making but little progress. San Francisco's shaft is built up with masonry, and sinking resumed.—General Remarks: We are making good progress in drawing out the water from San Rafael shaft with the horse-whim. The 2d level is already dry, and is passable for some considerable length. There are several arches of ground standing where the lode is found large, composed principally of carbonate of lime, sulphate of barytes, and some good stones of lead. If this important section of the mine can be forked to the bottom, and the water kept out without much trouble, so as to enable us to cut down the engine-shaft, and meanwhile sink and drive, it will be greatly to our advantage to apply steam-power in the first place to Taylor's shaft; this being so much nearer the engine can be got ready very quickly. The masonry are building the leading for main bob, and the carpenters preparing to erect the shears. The greater part of the pitwork is delivered on the mine. The horizontal rods are not yet brought up.

CAPULA.—Capt. Bray, Dec. 23: In La Esperanza level the ground has become still harder, but the appearance of the lode is better, several stones of ore having been broken in it, one of which has been brought me containing flakes of native silver; I have turned it a little more northerly, so as to get a little more into the settled part of the vein; but if the ground continues to increase in hardness, I shall be obliged to turn it a little more southwards again. The cross-cut south in San Enrique has been driven 2½ yds, and a small branch of good ore intersected; in crossing it 15 bags (say 2½ cwt) of ore were filled, which I am told will not lose much in cleaning. The lode of San José, west in San Francisco level, we have discovered ore, the value of which requires to be tested. Some of the stones are very good, but the greater quantity loose small stuff, which evidently contains a good deal of rubbish; two men in one week filled 60 bags, but should these come down in cleaning to one-half, or even less, it may be considered pretty good. On the same lode west, in the adit level, the ground is very hard indeed, and the lode poor. On the whole, the mine is looking better than at the date of my last report. A portion of the lift of pumps has been brought on to this place, but the working barrel has been sent to Mexico to be bored, and is not yet returned, whilst the horse-engine is being made we shall try to work it from the level above by manual labour; the cost so far has amounted to \$900.—The Hacienda: There are nine men employed cutting ground to continue the river and enclosing wall.—Santa Rosa de Janja: We have driven north 13 vms through the vein-stuff to the north; the level west is being continued from a spot I had marked before I went to Vera Cruz, and according to the report of the man in charge, the end has a favourable appearance; he has brought me in samples of the vein-stuff, and some selected stones, which appear to be fair ore. I shall assay the whole as soon as I am able.

NEW WILDBERG.—Z. Walls, Feb. 6: We have an improvement in the 30, driving west on the Dornberg; the lode is now worth full 40 cwt. of silver-lead ore per lachter. The 20, driving east on the Dornberg, has also much improved, being worth at present 60 cwt. of silver-lead ore per lachter; the sink coming down from the level above will soon be communicated to this drive. There is no other alteration in the underground department worth mentioning. At surface the weather is bitter cold, with severe frost, which sadly makes against our dressing operations. However, we have managed to dress our returns for January, and have sampled the same, computed 130 tons of silver-lead ore, which will be sold on Friday next.

RHENISH CONSOLS.—G. Sweet, Feb. 2: Christians: The engine-shaft is now 7 lachters deep, but the water is increasing, it being at the present time about 30 cubic feet per hour, which is almost too much for the men to draw; if it increases, though I hope we shall be able to continue throughout this month.—Bleibach: We are making good progress in sinking the new shaft, which is now 13 lachters deep. The lode that I mentioned in my last report cut in the shaft is of a very promising character, and will pay for working. As soon as the shaft is opened to the adit level, which I hope will be done this month, we shall extend a level on its course. In the deep adit cross-cut there is no alteration to mention.—Lahnberg: The new shaft at Lahnberg is 13 lachters deep, and the ground much better for sinking. We intend to continue sinking throughout this month, and then cross-cut the lode.—Völkelskaule: The ground in the adit for the last 6 lachters has been very hard and troublesome for driving, but it is now got through, and the end is in a softish kilas. By the run of the old workings I judge we are not far from the lode.—James Watt: In driving south the lode is still very wide, almost 2 lachters (3 fms.), and spotted with lead and blende; in the north and the lode is more defined, and producing saving work. I intend to sink the back at once where the lode was most productive in cutting through. In my last report I stated the quantity of lead ore raised and returned from the east and west lode. As the workings made on this lode were not above 8 lachters below the surface, we could by sinking a shaft apart from the old workings soon prove its quality below, and as by your instructions to me you have concluded to do this, I see no better time than to begin at once. The country being a soft sandstone, it will be easy for sinking.

LINARES.—Jan. 30: West of Engine-shaft—South Lode: In the 95, west of No. 129 winze, the lode continues very small, and the ground hard for driving. In the 85, west of Martin's winze, there is a change in the appearance of the granite, from which we infer that the lode is near. The lode in the 61, east of Jaldora's winze, is large and strong, letting out water. The lode in the 61, west of Santana's winze, is small, and the ground hard for driving. In the 110 cross-cut south the men are getting on well, and if the underlie of the lode is not greater than in the upper level, we shall cut it this month.—East of Engine-shaft: In the 95, east of Shaw's shaft, the lode is large, but entirely without lead. The 85, east of No. 130 winze, is also unproductive.—North Lode: In the 85, east of Brigg's winze, the ground is greatly improved, and the lode unproductive. The lode in the 85, east of Ortega's winze (middle lode), is large, and spotted with lead. In the 85, west of same, the ground is very hard for driving, and the lode spotted with lead. The lode in the 75, east of Field's shaft, is of a productive and kindly appearance, worth 1½ ton per fm.—Shafts and Winzes: The enlarging and squaring down of Crosby's shaft to the 51 will be completed this week. The lode in No. 131 winze, below the 55, is large, and spotted with lead. No. 132 winze is holed to the 55, and the lode at the point of communication was very large and productive, now worth 2 tons per fm. In No. 133 winze the lode is large, but falls off in value during the past month. In No. 134 winze the lode is of an open description, and the ground easy for driving.—General Remarks: The slopes throughout the mine are without any material alteration. We estimate the raisings for February month at 350 tons. The machinery and pitwork for Crosby's shaft are being brought to the mine, and will be put in forthwith.

FORTUNA.—Jan. 30: Canada Inco's—West of Taylor's Engine-shaft: In the 100, west of Gonzalez's winze, the lode is split into branches, and become unproductive. The 90, west of Zamora's winze, is now passing through a softer part of the cross-course. The 80, west of Santana's winze, the lode is small and poor. In the 70, west of Guillermo's winze, the lode is falling off in value, now worth 1 ton per fm. The ground in the 55, west of Clavel's winze, is hard for driving, and the lode very small and poor.—East of Engine-shaft: In the 70, west of Lowndes's shaft, and the 70, east of same, the lode contains spots of lead, but not enough to value. The lode in the 55, east of Lazaro's winze, is small, and the ground hard for driving. In the 45, east of Jose's winze, we are opening the north side in search of the main part of the lode. The 30, east of Domingo's winze, has undergone a change, and is now a small and poor lode.—Shafts and Winzes: In Henry's shaft, below the 70, the lode contains occasional stones of lead. St. Tomas shaft is suspended for the present, while the carpenters erect a horse-whim. The lode in Testero's winze is spotted with lead, but not enough to value. Nunes's winze is suspended temporarily, owing to the increase of water. Pascual's winze is hard for sinking, and the lode small and poor.—Los Salidos Mine: In the 90, west of Morria's engine-shaft, the lode is large and strong, and letting down a good deal of water. The 75, west of Sanchez's winze, has opened good ground during the past month; it is now, however, very small. In the 65, west of Buenos Amigos's winze, the lode is very strong, and of a kindly appearance. The 55, west of Galindo's winze, continues to open out splendid ground, worth 3 tons per fathom.—East of Engine-shaft: In the 90, east of Morria's engine-shaft, the lode is of a promising and productive appearance. The men are opening the 75, east of Domingo's winze, on what appears to be the point of the lode; we expect it will improve as it gets removed from the cross-course. The lode in the 65, east of Vivian's winze, is composed of quartz, spotted with lead. In the 55, east of Parra's winze, the lode consists of two productive branches. The 45, east of San Pablo's shaft, is improving, both in appearance and quality.—Shafts and Winzes: In San Miguel's shaft, below the 45, there is a good branch of lead. The lode in Delgado's winze is greatly disarranged, consequently unproductive. In Andre's winze the lode is small and difficult to sink, owing to the quantity of water. The lode in Millan's winze, below the 20, yields irregular lumps of lead, and the water is very plentiful.

PONTORBAUD.—W. H. Rickard, Feb. 2: Roure—Richards's Shaft: The 80 metre level south yields good stones of ore in hard quartz. The same level north is unproductive. The rise in back of the 80 south yields 1½ ton of ore per fm. The 60 south yields 1½ ton per fm. The 60, north of cross-cut, on Emilio's lode, yields ½ ton of ore per fm. Agnes: The 20 metre level south yields saving work for a width of 2 ft. The 30 south yields 1 ton of ore per fm. The adit south yields ½ ton per fathom. The stollen south of James's looks kindly—the lode yields a little friable quartz and barytes, without any ore. Virginie's shaft is 12 metres below the stollen; we hope in two months more to be at the level of the adit, where we shall cut tip-plate, and begin to sink again immediately. Our slopes throughout this mine, 15 in number, yield just the same as for months past. The tribute is just the same as last month.—La Grange: Noky's shaft is 23 metres below the 20 metre level; we shall sink about 2 metres more, which will be completed this week, when we shall begin to cross-cut for the lode, which will be intersected in about 4 metres driving. The 20 metre level north yields a little saving work. The adit north yields stones of ore, but not so kindly as when last reported. The slopes in back of the 20 metre and adit levels are not quite so good, on the whole.—La Rancoule: The cross-cut west is tolerably speedy for driving—six men can advance about 10 metres per month.—Miche: The 100 cross-cut, east of Taylor's engine-shaft, has got through the lode—we have set to drive north on its course; it is composed of quartz and barytes, in decomposed felspar, with spots of ore. The cross-cut west of the same level is wet and stiff for driving. The 80 north, on No. 2 lode, has become poor, composed almost entirely of barytes and quartz. We have set a short slope in the back to prove the ore ground we have driven through. Our tribute in this mine is without any change to mention.—Frasal: The lode in the rise in back of the 90 metre level, south of Bontoux's shaft, on Amantine lode, lets out so much gas as to make it impossible for the men to work. We have repaired the gas solars in the bottom of the 70, and hope to be able to sink in the bottom of that level.—Suzanne's Lode: The rise in the back of the 70 yields ½ ton per fm. The 50 north has met with a cross vein, which lets out much water, and which appears to have altered the ground, we hope, for the better; the lode, which is not heaved, yields good stones of ore. The 30 north is easier for driving—the lode is poor. The 8 north yields stones of ore and blende in the lower part of the level. The same level north, on the eastern part of the lode, opens tribute ground. The 8, south of No. 2 cross-cut, on No. 2 lode, yields stones of massive and spots of ore. The three slopes—two in back of the 70, and one in the

bottom of the 8, south of cross-cut—yield ½ ton of ore per fm. each. We have ten tribute pitches, working at prices varying from 70 to 125 frs. per ton of ore of 60 per cent. Nothing new in the cross-cut at La Mothe. At La Brosse we have discovered a fine bank of a lode, on which we have set to sink; we have dug out of it several tons of stuff, containing phosphate and carbonate of lead, with which is mixed stuff rich in silver. We shall see more of the regularity of the lode in a few metres sinking. Our surface works have gone on slowly, owing to the bad weather—very little has been done out of doors. The weather is also unfavourable for our dressing operations, as it freezes very hard by night. Our samplings have amounted to 210½ tons.

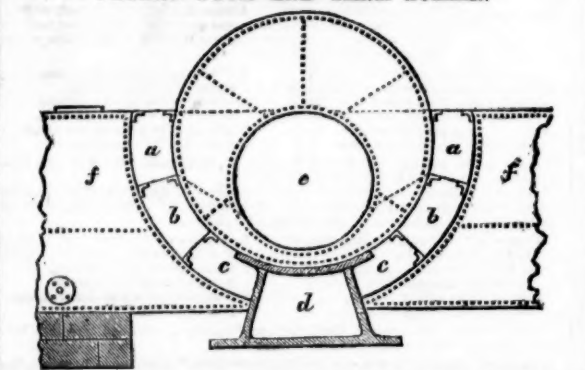
SANTA BARBARA (Gold).—Paris, Dec. 28: Capt. Bryant has furnished a general report on the mine for the past six months, which will be published and circulated amongst the proprietors, previous to the usual half-yearly meeting to be held at the end of the present month. The appearance of the lode is more promising than hitherto seen, and from a trial of selected stones from the bottom of the mine of 25 tons, the yield was 4406 cts. of 11 dwts. per ton of stone, which Capt. Bryant confidently expects will continue, in which case the returns will be considerably increased, and insure a good and lasting mine.—Trial Level: We have opened south upon the branch about 4 fms., where it is enlarging itself, being now 18 in. wide, and, as we suppose, the lode; although it is at present small, we have every reason to believe it will enlarge on entering the rock; some of the samples show gold. Bill of lading for 382 cwt. of gold, value 1400 frs., is to hand.

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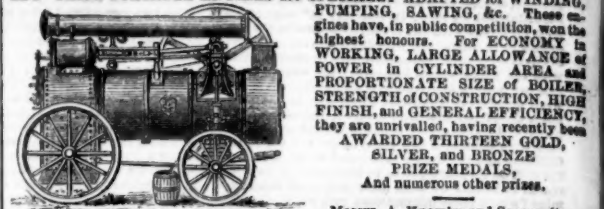
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